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ETHERNET CONTROLLER

ARL2300

User Manual

AOR Ltd.

Authority On Radio Communications

Introduction

Thank you for purchasing ARL2300.

The ARL2300 Ethernet Controller is an option for the AR2300 and AR5001D communication receivers, which allows remote control and remote listening through the network.

The client software is based on the Java 2 platform and requires version 1.6 (Java SE 6 runtime) or higher to be installed on the PC on which it is running.

The settings of ARL2300 can be easily changed through the local network (DHCP mode) by using a browser, based on Apple's "Zero configuration" software Bonjour.

To obtain the best possible results from your ARL2300, we strongly recommend that you read this manual and familiarize yourself with ARL2300.

As for any network related remote control device, a good understanding of LAN,WAN, routers, IP addresses, port forwarding, etc... is necessary to set-up and use ARL2300. Very importantly, you must be able to set-up port forwarding on your own router! Make sure you have access to your router manual before going ahead in setting up ARL2300. As there are hundreds of different router models on the market, with almost as many different ways to configure them, AOR is unable to assist you in troubleshooting port forwarding and network security issues.

Every effort has been made to make this manual correct and up to date. Due to continuous developments of the device, we acknowledge that there may be some errors or omission anomalies.

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1 Included in this package

- ARL2300 device 1
- Control cable 1 Length 0.9m, straight D-sub 9pin
- Audio cable 1 Length 1m、φ3.5mm stereo
- Rubber feet 1 Set of four
- Printed manual 1
- CD-ROM 1 Client software & manual pdf.

What you need to prepare:

-One straight LAN cable for connection between ARL2300 and your router.(Not supplied)

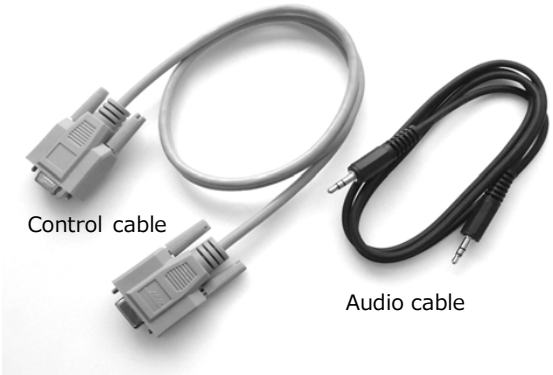
-One available LAN port on your router

Note : When used with the AR2300/AR5001D receivers, ARL2300 is receiving power directly from the receiver through the control cable. It does therefore not need to be powered by an AC adapter.

ARL2300

Printed manual

CD



Control cable

Audio cable

Rubber feet

2 Externals

ARL2300 front view

ARL2300 on top of AR2300 receiver

Front panel

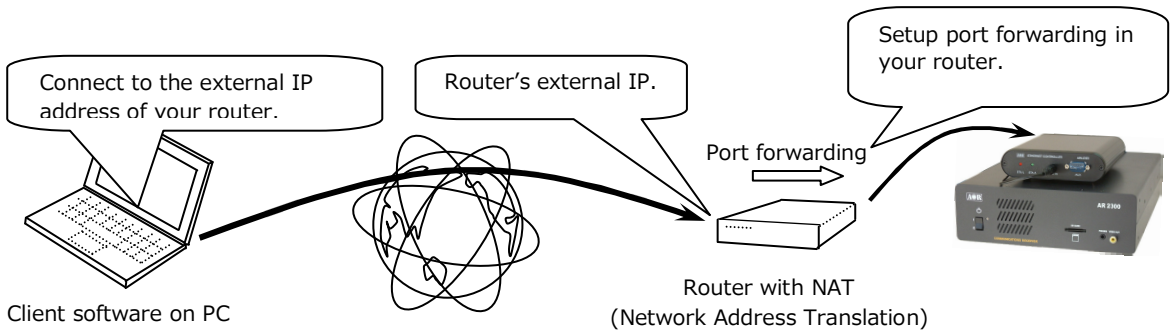
STA-L	Red LED, log-in state
STA-A	Green LED, operation state
Audio IN	Audio input 3.5φstereo jack
AUX	Serial port for future applications

Back panel

LAN	LAN port
Receiver	Serial connection to receiver
DC5V IN	DC 5V External power input. (Not needed if connected to AR2300/AR5001D receivers)

3 Typical client / server network

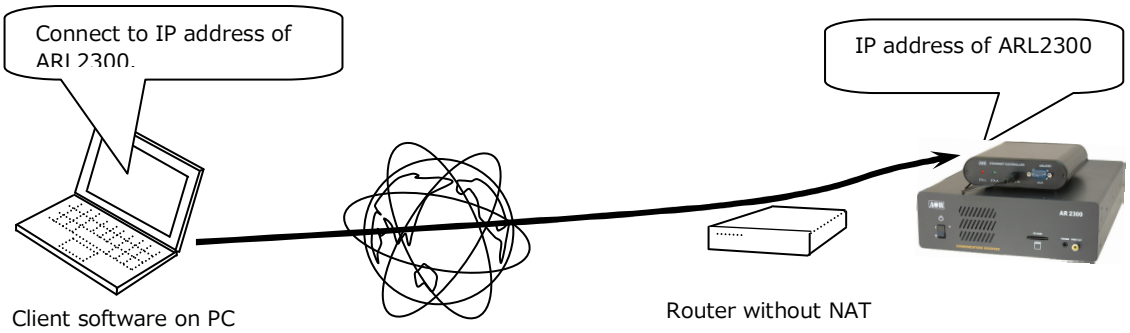
Case 1: Through a router with NAT.


Connect to the external IP address of your router.
Router's external IP.
Setup port forwarding in your router.
Port forwarding
Client software on PC
Router with NAT
(Network Address Translation)

- You need to have a GLOBAL IP address assigned to the external port of your router. (Please inquire your internet provider to this effect) Dynamically addressed IP addresses do often change by nature, therefore the client side would have no way to track the IP address changes and would not be able to connect to the remote receiver.

- It is necessary to setup PORT FORWARDING in your router, towards the IP address of your ARL2300. See chapter 6 "ARL2300 settings" regarding the related port numbers and IP address. Please refer to your router's manual on how to setup port forwarding.

Case 2: Through the Intranet (router without NAT)



When you connect to your ARL2300 over the network from the client side software, you must first input the IP address of ARL2300 (or external IP address of your NAT router when using NAT) as a target. You can also input a hostname which shows the IP address registered in the DNS.

4 Connection to AR2300/AR5001D receiver

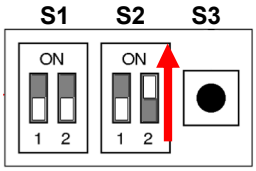
■Receiver serial communication settings

If you have changed the receiver's serial communication settings from the default values, make sure to revert to following:

- Communication speed 115200bps
- Interface USB priority, or AUX priority, or AUX only
- Flow control none

■Setting the receiver's DIP switches

After switching the receiver OFF, use a "minus" driver to put the S2 #2 dip switch into position ON, as described in this graphic >>

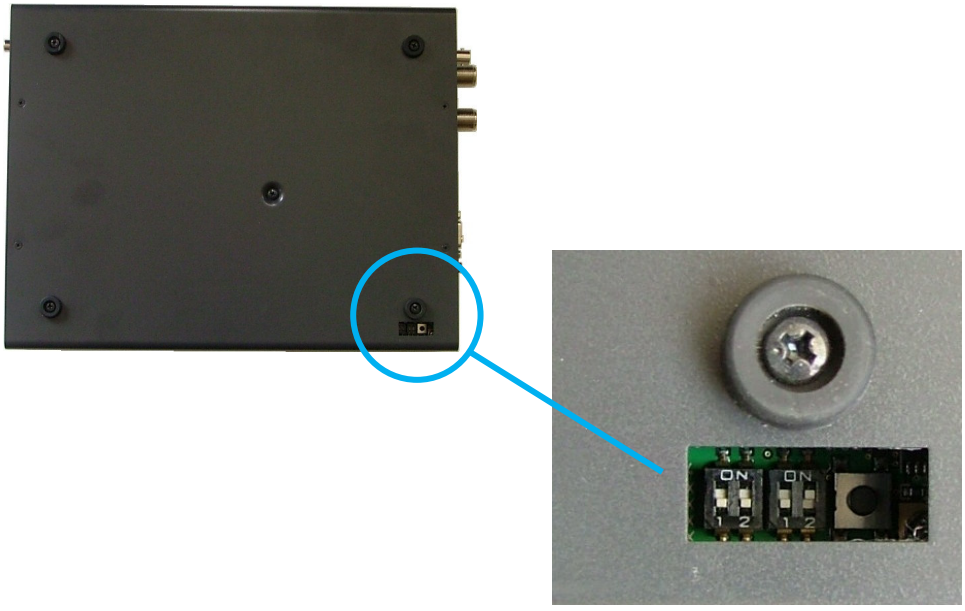


Warning: Changing dip switch settings while the receiver is ON will cause a receiver malfunction!

AR2300: The power switch is on the front panel

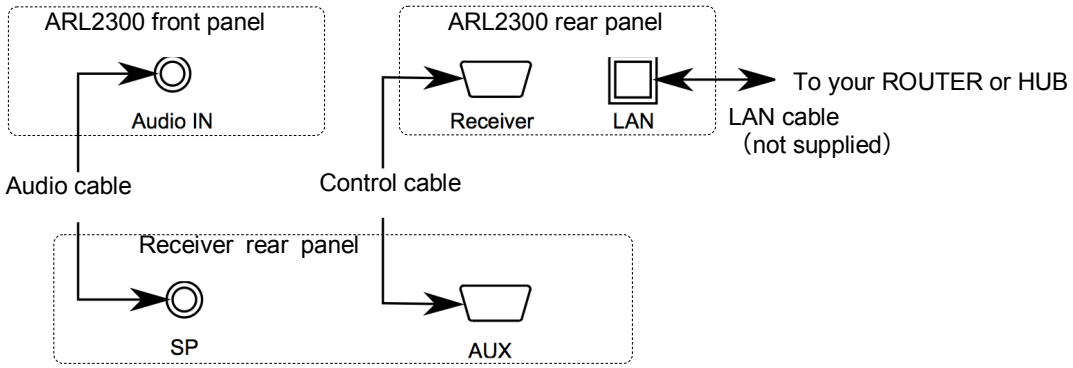
AR5001D: Use the main power switch on the BACK of the receiver.

Dip switch access for AR2300 (bottom of receiver)



■Cable connection

The receiver being switched off, connect the cables as follows:



Warning: Connecting / disconnecting the control cable while the receiver is ON will cause a receiver malfunction!

Backside of ARL2300 & AR2300 with all cables connected

Remarks: On the receiver side, the audio cable can alternatively be connected to the back panel's LINE output as well as the front panel's PHONES output. Nevertheless, audio level adjustment is not possible when connected to LINE

5 Front panel power state

Once all cables are connected as explained in chapter 4 “Connection to AR2300/AR5001D receiver”, you can switch on the receiver. Switching on the receiver will at the same time power the ARL2300.

Right after power is on, the red STA-L led will be lit. After approx. 1 minute, ARL 2300 will enter in stand-by mode, the red STA-L led will go off and the green STA-A will be lit. The time necessary to enter the stand-by mode might vary depending on the network environment.

■ARL2300 LED status indicator

ARL2300 status	STA-L（red LED）	STA-A（green LED）
Power is off	off	off
Right after powering on, initialize time	on	off
Initializing has ended, stand-by mode	off	on
Connected to client, but no transmission to client	on	on
Connected to client, with transmission to client	on	flashing
Firmware download & installation	Combination of both ON and both flashing	

6 ARL2300 settings

Hardware & software requirements to change the ARL2300 settings:

Any Windows or Mac PC with a browser having the “Bonjour” add-on installed. See details below.

The ARL2300 settings are accessible with a browser using ZEROCONF, a service discovery protocol based on Apple Inc.’s BONJOUR software. The IP address and host name (*1) are assigned automatically, providing your computer has Apple’s BONJOUR (*2) installed, and that your PC is connected to the same LAN than ARL2300.

*1 : Host name assigned automatically by BONJOUR service discovery.
Displayed host name example: http on arlan-0
When more than one ARL2300 devices are connected to the same LAN, the host names are displayed as follows: http on arlan-1, http on arlan-2, http on arlan-3, etc…

*2 : BONJOUR add-on per browser

Safari	Bonjour installed by default
Mozilla Firefox4	DNSSD for Firefox add-on needed
Mozilla Firefox3	BONJOURFOXY add-on needed
Microsoft Internet Explorer	BONJOUR FOR WINDOWS software needed

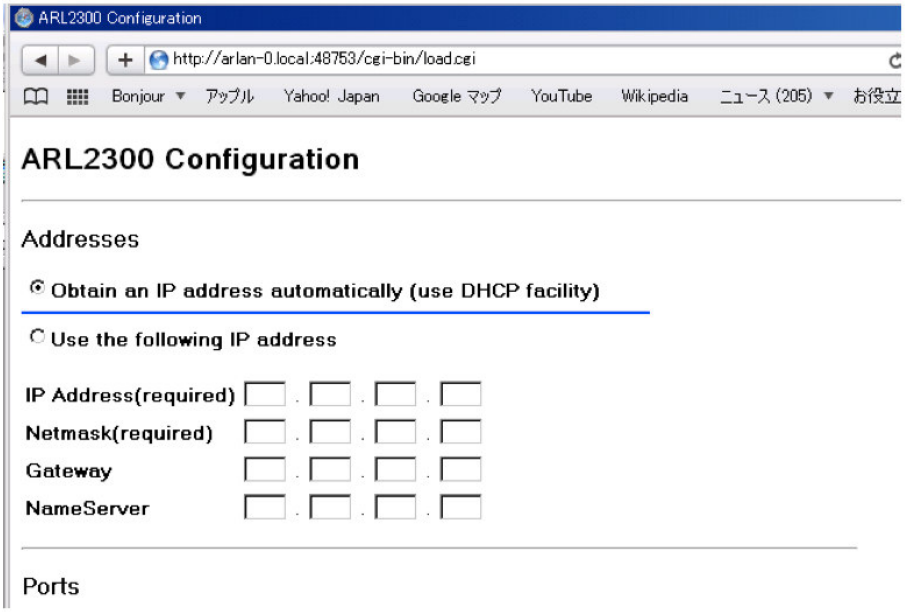
(Installers on Windows systems normally place Bonjour files in a folder called “Bonjour” within the “Program Files” folder.)

ARL2300 has its IP address automatically assigned by the DHCP server; nevertheless you need to manually input the IP address (host name) in the client software.

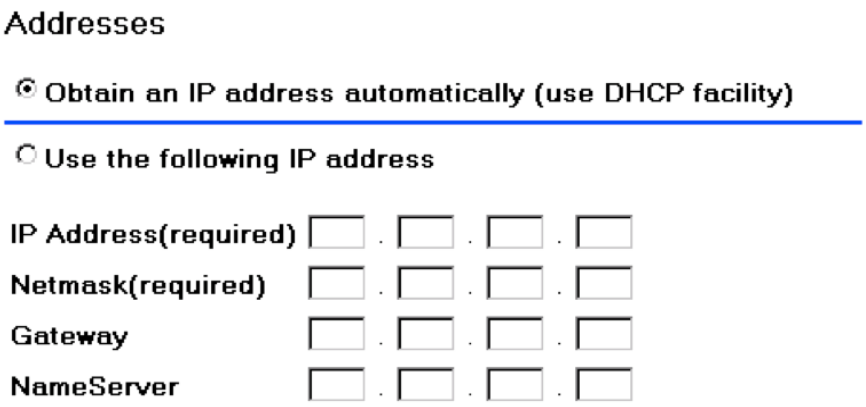
Although the ARL2300 settings page can be accessed at any time, network configuration changes can only be done when ARL2300 is in stand-by mode (only the green LED is on)

To open the settings page of ARL2300, type the following address in the browser bar:
http://arlan-0.local:48753/
You will then be asked to enter the user name and password (neither can be changed).
User name : **Admin**
Password : **Arl_2300**

After a successful login, the following settings page will appear:



■**Address settings:**



By default, “Obtain an IP address automatically” is selected, nevertheless you can choose to manually enter address parameters to match a particular network environment.

・**IP Address(required)**

IP address you wish to allocate to ARL2300

・**Netmask(required)**

Netmask for ARL2300 according to the specific network environment

・**Gateway**

Gateway for ARL2300 according to the specific network environment. Leaving it empty is as if you entered the values 0.0.0.0

・**NameServer**

NameServer for ARL2300 according to the specific network environment.

(Required for firmware update)

■Port settings

You need to open the following ports on your (NAT) router and to forward these ports to the ARL2300. Receiver remote control will not function unless port forwarding is correctly initiated. Please consult your router documentation on the procedure.

Each port number can be set to any value between 10001 and 65535.

・**TCP Port**

Port used to send the control commands to the receiver

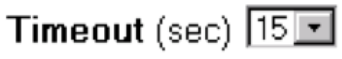
・**UDP Port**

Port used for audio from the receiver

・**Conf Port**

Port used to access the ARL2300 settings through the browser

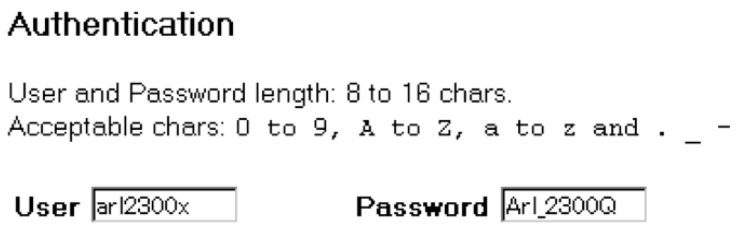
■Timeout



Set the range from 10 to 60 seconds, in 5 seconds steps.

If the command data from the client software is not received within the time set here, ARL2300will cut the communication with the client.

■Authentication


Authentication
User and Password length: 8 to 16 chars.
Acceptable chars: 0 to 9, A to Z, a to z and . _ -
User
arl2300x
Password
Arl_2300Q

Here you can restrict access from the client software by setting a username and password of your choice..

Leaving blanks would allow anyone to access ARL2300.

■Save options

Reload(without SAVE) Reverts all settings to the last saved state.

Quit(without SAVE, LOGOUT) Quit the settings page without saving any changes you might have made.

Save Settings are saved.

At this stage, the changes have not been implemented by ARL2300 yet, as it needs to be rebooted.

The next chapter explains this procedure.

■Summary of saved settings & reboot

Once your changes have been saved as per the previous chapter, the summary of your ARL2300 configuration will be displayed and you will be given the following choices:

Reboot

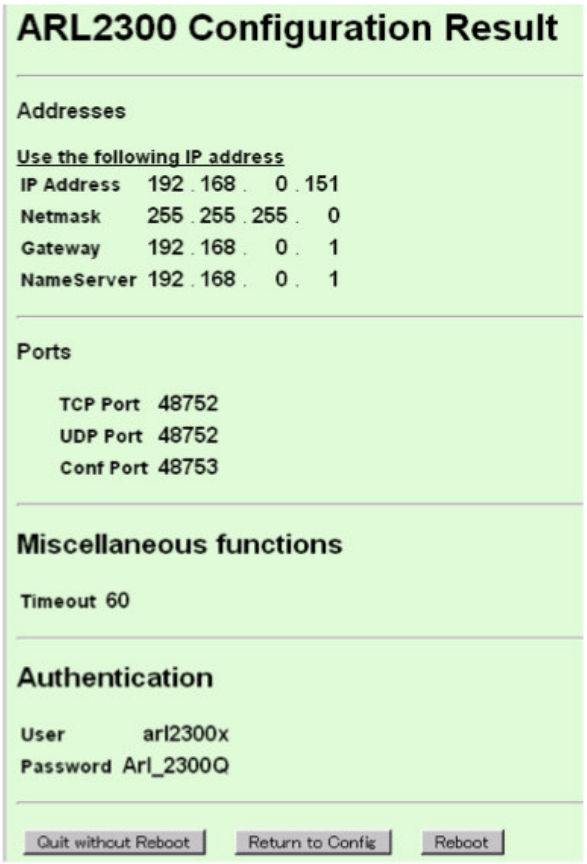
ARL2300 will be rebooted and the changes implemented.

Quit without Reboot

Logout from the ARL2300 settings without rebooting ARL2300. The settings changes you have previously saved are not implemented yet by ARL2300.

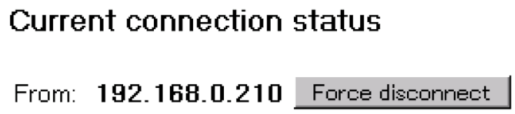
Return to Config

In case you need to edit the settings again.



■Current client connections

Here will be displayed the IP address of the currently connected client.



Force disconnect — Click this button to force disconnection of the currently connected client.

This is the display when no client is connected to ARL2300.

Update information — Click to refresh the current client connection status (*).

(*) While you access the settings page, the “current connection status” is not automatically refreshed. In other words, you would not know if a client accesses ARL2300 while you are on the settings page, unless you click the “Update information” button.

■Firmware update

The ARL2300 firmware can be updated online, using ports TCP 80 (HTTP) and 443 (HTTPS). Make sure that your router does allow ARL2300 to access these ports; otherwise the firmware update will fail. Please consult your router documentation on the port access procedure.

Please note that the online update might be impossible depending on your firewall and proxy settings.

To proceed with the update, click on the “Move to ARL2300 firmware update page” link at the bottom of the ARL2300 settings page.

Possibility #1: ARL2300 already has the latest firmware, in which case the following message appears:

ARL2300 Firmware Update
ARL2300 Firmware Update
300 Latest firmware used.
You do not need upgrade this firmware.
Exit ARL2300 Firmware Update

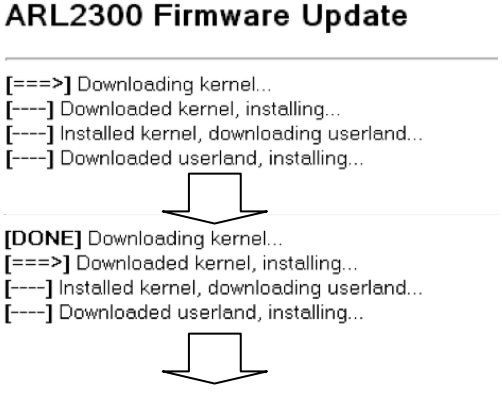
In this case just click on “Exit ARL2300 Firmware Update” to return to the settings page.

Possibility #2: There is a newer firmware version available, in which case the following page appears:

ARL2300 firmware update
ARL2300 firmware update
WARNING
The firmware update process is done entirely at your own risk.
If performed correctly, there will be no harm on your system.
However, if the firmware update process is interrupted for any reason,
your ARL2300 may not function properly.
Ensure that you have an Internet connection.
Default gateway and DNS server settings are required for firmware update.
During the firmware update process, do not interrupt the process.
The firmware update takes approximately 5-10 minutes.
Do not remove power at any time during firmware update.
Power disruption may cause damage to the unit.
Never disrupt an Internet connection during the firmware update process.
Internet connection disruption may cause damage to the unit.
Do not close or exit the browser during firmware update process.
This may cause damage to the unit.
When the firmware update is complete, the system automatically
disconnects the host connection and reboots the ARL2300.
CLICK "YES" TO START.
CLICK "NO" TO CANCEL UPDATE.
CLICK "MENU" TO CONFIGURATION.
YES
NO
MENU

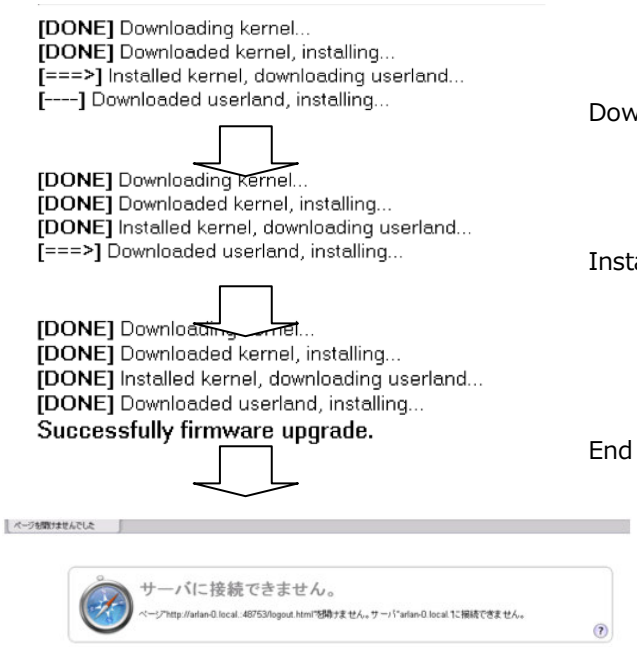
Once you are aware of the risks involved and if you wish to go ahead with the update, click on YES

The screen will inform you on the update progress as follows:



Downloading the kernel…

Installing the kernel…


[DONE] Downloading kernel...
[DONE] Downloaded kernel, installing...
[===>] Installed kernel, downloading userland...
[----] Downloaded userland, installing...
[DONE] Downloading kernel...
[DONE] Downloaded kernel, installing...
[DONE] Installed kernel, downloading userland...
[===>] Downloaded userland, installing...
[DONE] Downloaded kernel, installing...
[DONE] Installed kernel, downloading userland...
[DONE] Downloaded userland, installing...
Successfully firmware upgrade.

Downloading userland image…

Installing userland image…

End of firmware upgrade,

(ARL2300 is automatically rebooting. Disregard any message saying that the Internet connection was interrupted.)

7 ARL2300 client software

Hardware & software requirements to run the client software:
Any PC running Java 2 (v.1.6 or later). See details below.

The client software is based on the Java 2 platform and requires version 1.6 (Java SE 6 runtime) or higher to be installed on the PC on which it is running. For more information please refer to http://java.com

The supplied ARL2300 client software only supports basic functions of VFO reception, over the network and the internet. The current version does not support the receiver's advanced features such as search, scan, simultaneous reception etc...

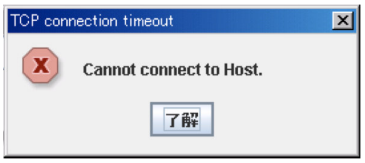
7.1 How to use the client software

◆ **Do not execute the client software directly from the CD. You first need to copy the software folder to your client PC.**

◆ ARL2300 only allows one client connection at a time. If somebody else is already connected when you try to establish the communication, you will encounter this "Busy!" error message.

◆ **Cannot connect to host (ARL2300) message**

Possible reasons for this error message are:



- The IP address (or host name) for ARL2300 or its TCP port number you entered in the client software, are incorrect.
- The IP address, when using dynamic DNS on ARL2300, has not been updates

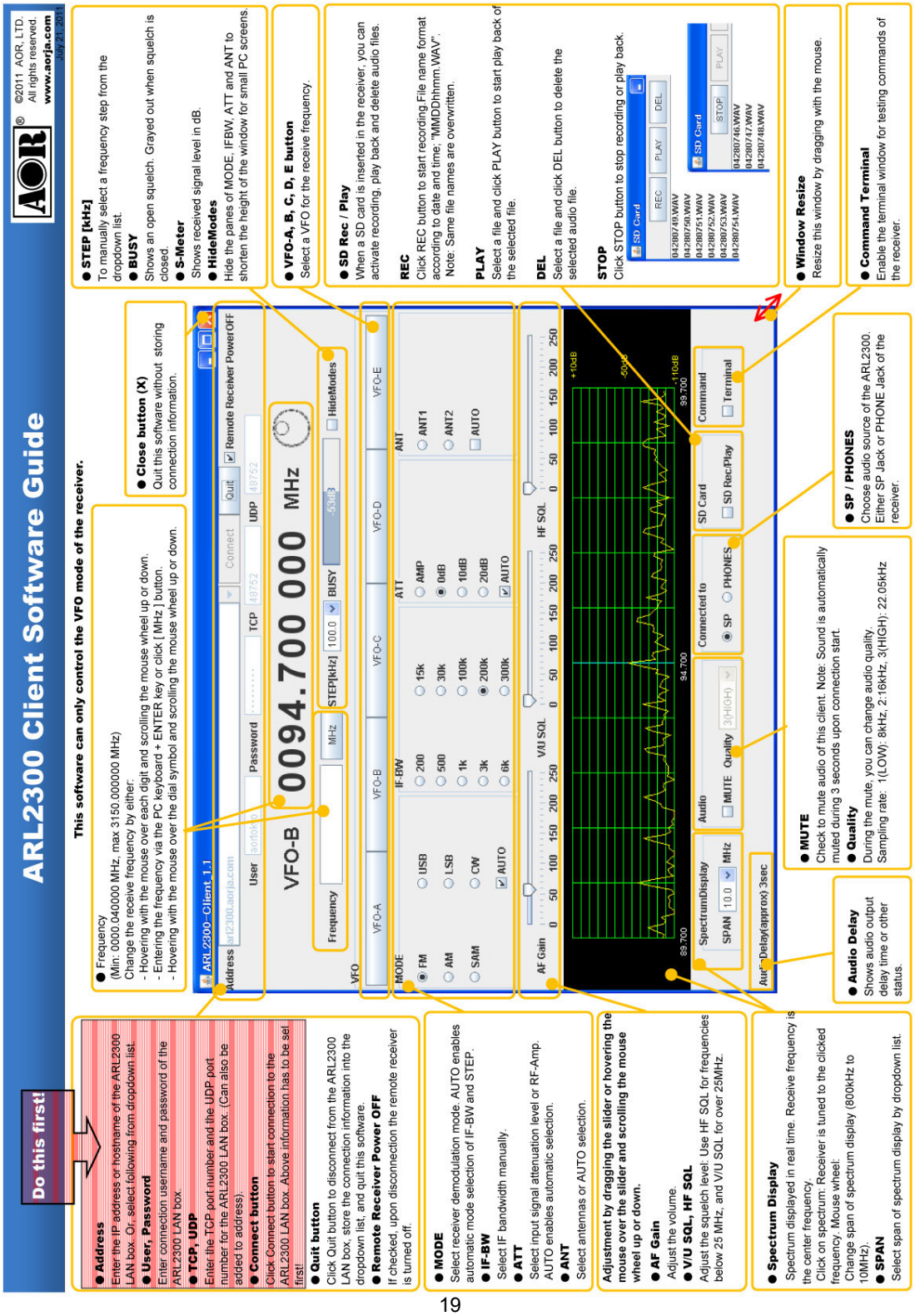
If you can connect to ARL2300 but hear no sound, then most probably the UDP port number is incorrect.

◆ **Login incorrect**

The user name and/or password you entered are incorrect.

Entries are case sensitive.

7.2 Control screen (see separate A4 size print)


ARL2300 Client Software Guide
AOR
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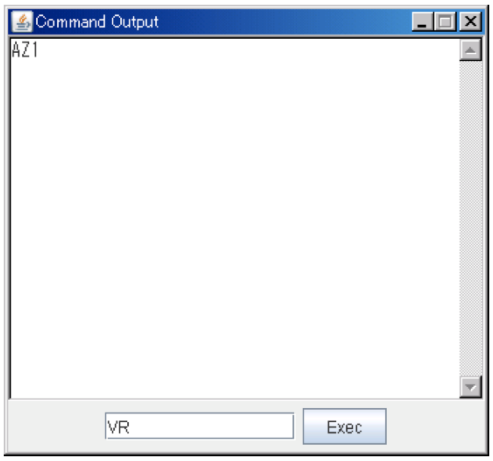
www.aorja.com
July 21, 2011
This software can only control the VFO mode of the receiver.
Do this first!
● Address
Enter the IP address or hostname of the ARL2300 LAN box. Or, select following from dropdown list.
● User, Password
Enter connection username and password of the ARL2300 LAN box.
● TCP, UDP
Enter the TCP port number and the UDP port number for the ARL2300 LAN box. (Can also be added to address).
● Connect button
Click Connect button to start connection to the ARL2300 LAN box. Above information has to be set first!
● Quit button
Click Quit button to disconnect from the ARL2300 LAN box, store the connection information into the dropdown list, and quit this software.
● Remote Receiver Power OFF
If checked, upon disconnection the remote receiver is turned off.
● MODE
Select receiver demodulation mode. AUTO enables automatic mode selection of IF-BW and STEP.
● IF-BW
Select IF bandwidth manually.
● ATT
Select input signal attenuation level or RF-Amp. AUTO enables automatic selection.
● ANT
Select antennas or AUTO selection.
Adjustment by dragging the slider or hovering the mouse over the slider and scrolling the mouse wheel up or down.
● AF Gain
Adjust the volume.
● V/U SQL, HF SQL
Adjust the squelch level: Use HF SQL for frequencies below 25 MHz, and V/U SQL for over 25MHz.
● Spectrum Display
Spectrum displayed in real time. Receive frequency is the center frequency.
Click on spectrum: Receiver is tuned to the clicked frequency. Mouse wheel:
Change span of spectrum display (800kHz to 10MHz).
● SPAN
Select span of spectrum display by dropdown list.
● Frequency
(Min: 0000.040000 MHz, max 3150.000000 MHz)
Change the receive frequency by either:
- Hovering with the mouse over each digit and scrolling the mouse wheel up or down.
- Entering the frequency via the PC keyboard + ENTER key or click [MHz] button.
- Hovering with the mouse over the dial symbol and scrolling the mouse wheel up or down.
● Close button (X)
Quit this software without storing connection information.
● STEP [kHz]
To manually select a frequency step from the dropdown list.
● BUSY
Shows an open squelch. Grayed out when squelch is closed.
● S-Meter
Shows received signal level in dB.
● HideModes
Hide the panes of MODE, IFBW, ATT and ANT to shorten the height of the window for small PC screens.
● VFO-A, B, C, D, E button
Select a VFO for the receive frequency.
● SD Rec / Play
When a SD card is inserted in the receiver, you can activate recording, play back and delete audio files.
REC
Click REC button to start recording.File name format according to date and time: "MMDDhhmm.WAV". Note: Same file names are overwritten.
PLAY
Select a file and click PLAY button to start play back of the selected file.
DEL
Select a file and click DEL button to delete the selected audio file.
STOP
Click STOP button to stop recording or play back.
● Window Resize
Resize this window by dragging with the mouse.
● Command Terminal
Enable the terminal window for testing commands of the receiver.
● Audio Delay
Shows audio output delay time or other status.
● MUTE
Check to mute audio of this client. Note: Sound is automatically muted during 3 seconds upon connection start.
● Quality
During the mute, you can change audio quality.
Sampling rate: 1(LOW): 8kHz, 2:16kHz, 3(HIGH): 22.05kHz
● SP / PHONES
Choose audio source of the ARL2300. Either SP Jack or PHONE Jack of the receiver.
ARL2300 - Client 1.1
Address
User
Password
TCP
UDP
Connect
Quit
Remote Receiver PowerOFF
VFO-B
0094.700 000 MHz
Frequency
MHz
STEP[kHz]
BUSY
HideModes
VFO
VFO-A
VFO-B
VFO-C
VFO-D
VFO-E
MODE
FM
AM
SAM
USB
LSB
CW
AUTO
IF-BW
200
500
1k
3k
6k
15k
30k
100k
200k
300k
ATT
AMP
0dB
10dB
20dB
AUTO
ANT
ANT1
ANT2
AUTO
AF Gain
V/U SQL
HF SQL
0 50 100 150 200 250
+10dB
-50dB
89.700
94.700
99.700
SpectrumDisplay
SPAN
10.0
MHz
Audio
MUTE
Quality
3(HIGH)
Connected to
SP
PHONES
SD Card
SD Rec/Play
Command
Terminal
Aud. Delay(approx) 3sec.
SD Card
REC
PLAY
DEL
0428074 9.WAV
0428075 0.WAV
0428075 1.WAV
0428075 2.WAV
0428075 3.WAV
0428075 4.WAV
STOP
0428074 6.WAV
0428074 7.WAV
0428074 8.WAV

7.3 Terminal command window

Checking the “Terminal” box at the bottom right of the client software control screen does open the terminal command window.

Refer to the AR2300AR5001D receiver manual for the complete command list. To send a command to the remote receiver, type the command in this terminal window and hit the Exec button.



Please note that here you can only SEND commands but this window will not show you the response sent by the receiver! This being a “client software” interface, the software will interpret the responses in its interface.

Note : As an alternative to the AOR software, you can use a Telnet software to test commands and their responses

Example of Telnet command testing

```
~$ telnet 192.168.0.151 48752
Trying 192.168.0.151...
Connected to 192.168.0.151.
Escape character is '^]'.
330 +OK
USER ar12300x
331 +OK
PASS Ar1_2300Q
231-@
232-TIMESTAMP
233-ADDLM
234-ABUFSIZ8192
235-1.0
230 Welcome.
ZP00


AR2300 Start!!!
RX
VA RF0079.500000 ST100.000 AU1 MD22 AT10 AN01
VFB

RX
VB RF0084.500000 ST100.000 AU1 MD22 AT10 AN01
VFE

RX
VE RF0000.684000 ST009.000 AU1 MD26 AT10 AN02
LM
LM072.5P
VFC

RX
VC RF0147.430000 ST020.000 AU1 MD24 AT01 AN11
VFD

RX
VD RF0001.233000 ST009.000 AU1 MD26 AT01 AN22
VFA

LM
LM051.5P
QP

AR2300 Shut Down!!!
^]
telnet> quit
Connection closed.
~$
```

8 Communication procedure

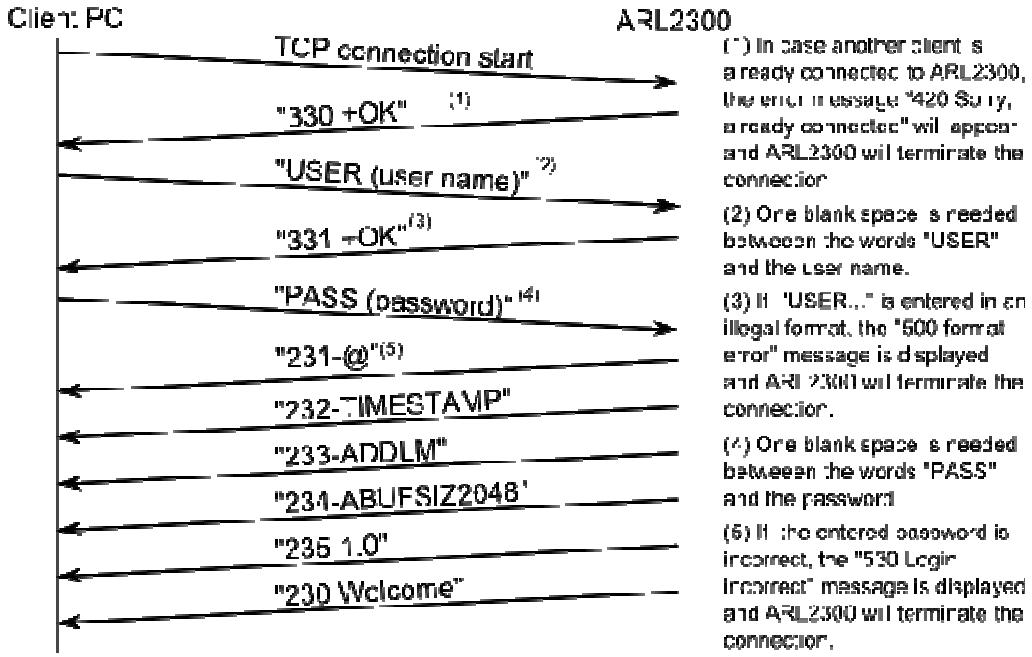
8.1 ARL2300 communication protocol

TCP is used for control data communication between ARL2300 and the client software (client PC).

8.2 TCP receiver control port

The receiver control and the ARL2300 control are done with the following TCP control port.

TCP communication chart (command names omitted)


Client PC
ARL2300
TCP connection start
"330 +OK" (1)
"USER (user name)" (2)
"331 +OK" (3)
"PASS (password)" (4)
"231-@" (5)
"232-TIMESTAMP"
"233-ADDLM"
"234-ABUFSIZ2048"
"235 1.0"
"230 Welcome"
(1) In case another client is already connected to ARL2300, the error message "420 Sorry, already connected" will appear and ARL2300 will terminate the connection
(2) One blank space is needed between the words "USER" and the user name.
(3) If "USER..." is entered in an illegal format, the "500 format error" message is displayed and ARL2300 will terminate the connection.
(4) One blank space is needed between the words "PASS" and the password
(5) If the entered password is incorrect, the "530 Login Incorrect" message is displayed and ARL2300 will terminate the connection.

If the TCP connection procedure has been successful, ARL2300 is sending a “230 Welcome” message to the client PC. Starting from that moment, the receiver is under remote control.

If you are using a terminal software, you can now try to send commands such as RX, RF, etc… The command should be terminated by <CR> or <CR><LF>. All responses from receiver are terminating by <CR><LF>.

Three digits of result code are added to each message from the ARL2300. If the blank character (blank code) has been added immediately after the result code, the ARL2300 send a simple message and wait for the data from client.

If the hyphen (-) has been added immediately after the result code, there is a data or message that needs to be send to client.

Do not attempt to send data to the ARL-2300 until the appropriate result code (result code with immediate blank code) is received. Make sure to send data to ARL2300 after the result code with immediate blank code.

The result code consists of three digits (in hundreds) and represents the following message groups:

2xx - Immediate success on received command and message.
3xx - Requesting more commands.
4xx - Send message to client and disconnect the link.
5xx - Error

The 2xx result code generated from the ARL2300 in the TCP Communication Chart has following meanings:

231 - Prefix for special command,
232 - Adding time stamp to the UDP packet is possible.
233 - Adding LM value (Receiver S-meter value) to the UDP packet is possible.
234 - Maximum octets value for the audio data for one packet.
235 - ARL2300 version information.

New result codes may be added at the time of future firmware updates, however, successful TCP connection establishment always ends with the "**230 Welcome**" message. Refer to chapter 8.3 (UDP audio transmission port) for details on result codes 232, 233 and 234.

8.2.1 Special command prefixes

The special CPF (Special Command Prefix) is a header character that controls ARL2300. If data is sent to the ARL2300 without special CPF, the data is applied to the receiver directly. No data is passed on to the receiver if ARL2300 received the command with special CPF, and the data is used to control the unit.

Command Prefix	Command Type	Description
b	Audio data length of UDP packet	Set the length of audio data for one UDP packet. The length should be set by octet. The octet value should be smaller than the result code of 234 and it should be an even number. Example: b2048 ---- Set to octet 2048
e	Set special CPF	The default character is "@". To change the special CPF, use this command. Example: e+ ---- Set special CPF to "+"

f	Select LPF	Selects the LPF in the ARL2300. The cut-off frequency and parameter as follows: f0: Through, f1: 9kHz, f2: 6.4kHz, f3: 3.2kHz
g	Select gain	Selects the audio gain of the ARL2300. The audio gain and parameter as follows: g0: 0dB, g1: +3dB, g2: +6dB, g3: -6dB
l	Add LM to UDP packet	Adds the LM value (S meter value) to UDP data. Example: l0: No LM vale is added , l1: LM value is added
p	Start audio transmission	This command is required to start audio transmission from the ARL2300. Please see details in chapter 8.3.
q	End audio transmission	Stop audio transmission from the ARL2300.
s	Select audio sampling rate	Selects the sampling rate (audio quality). This command should be used with the “f” command. Available sampling rates and parameters as follows: s8000: 8kHz, s11025: 11.025kHz, s16000: 16kHz, s22050: 22.05kHz, s32000: 32kHz, s44100: 44.1kHz, s48000: 48kHz
t	Add TIME STAMP to UDP packet	Adds the time-stamp to UDP packet. The time-stamp format is a value in seconds started from Jan 1, 1970. (aka Unix time) Example: t0: No time stamp is added. t1: Time stamp is added.

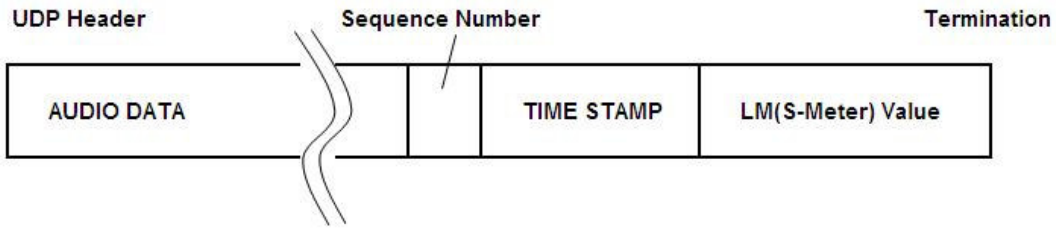
8.2.2 Firmware version

The number followed by the result code 235 is a version number of the ARL2300. The number only represents major change in the firmware.

8.3 UDP audio transmission port

To receive UDP data (audio data) from remote ARL2300, the client PC needs to send the “p” command as described in chapter 7.2.1.

UDP Payload Diagram



Furthermore, UDP requires audio transmission start command immediately after the “p” command.
The UDP command is @p1. This command should be sent to the ARL2300 every 10 to 120 seconds until audio transmission is stopped. To temporarily stop the UDP data transmission from the ARL2300, the q1 command should be issued. To stop the UDP data transmission completely, the q command should be issued. The **q1** command can be altered by q if complete termination of UDP transmission is needed.

■ AUDIO DATA

Audio data is an uncompressed PCM with symbol consisting of 16-bit little-endian format. One payload can carry 800 octets as initial value. The size can be changed by “b” command as described in chapter 8.2.1 “Special command prefixes”. However, maximum octet value should be smaller than the result code of 234 and it should be an even number.

The maxim audio data size shown in the TCP Communication Chart is 2048, that is a part of result code 234 (234-AUBFSZIE2048) shown in the example.

■ SEQUENCE NUMBER

Every single octet data send over UDP has a sequence number between 0 and 255. The sequence number increases in every UDP packet transmission.

■ TIME-STAMP

The time-stamp format is a value in seconds started from Jan 1, 1970. (aka UNIX time) and it represents the latest incidence of the generated data. The time-stamp is 4 octets in size and stored in big-endian format. The inclusion of TIME-STAMP can be selected by the “ t“ command as described in chapter 8.2.1 “Special command prefixes”. The default value is t0 (No TIME-STAMP is added).

■ LM VALUE

The LM value space of the UDP payload stores the leading 9 characters string of the actual LM value. If the associated receiver responds with the LM command, the receiver sends the LM value. The inclusion of LM can be selected by the “ l “ command as described in chapter 8.2.1 “Special command prefixes”. The default value is l0 (No LM value is added).

9 Serial port communication specifications

1. Receiver (back panel)

Communication speed	115200bps (non-changeable)
Data	8bit
Stop bit	1
Flow control	none
Pin layout	DTE

2. AUX (front panel) (for future applications)

Communication speed	9600bps (non-changeable)
Data	8bit
Stop bit	1
Flow control	none
Pin layout	DTE

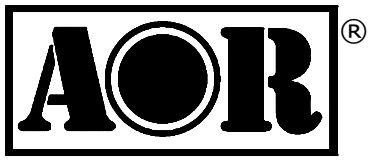
10 Factory default settings

■ARL2300 defaults

Item	Default	Remarks
TCP Port	48752	Used for receiver control
UDP Port	48752	Used for voice transmission
Conf Port（TCP）	48753	Used to access the configuration screen
User	arl2300x	Login name to access ARL2300
Password	Arl_2300Q	Password to access ARL2300
Configuration User	Admin	Login name to access configuration. Cannot be changed.
Configuration Password	Arl_2300	Password to access configuration. Cannot be changed.
AUX (for future applications)	48751	Number set automatically as TCP number -1. Cannot be changed manually.

11 ARL2300 specifications

Item number	ARL2300
Function	Ethernet controller for AR2300/AR5001D receivers
LAN socket	RJ-45 type 10BASE-T / 100BASE-TX10/100Mbps (auto-sense)
Receiver socket	D-sub 9pin type Connection to AR2300/AR5001D receiver
Audio IN socket	3.5mm stereo used as mono Connection to AR2300/AR5001D audio output
AUX socket	D-sub 9pin type, RS-232C (For future applications)
Network protocols	TCP (receiver control), UDP (voice transmission)
Required network speed	Constant 80, 160, 500kbps depending on sampling rate choice.
Controller	Cirrus Logic EP9307 CPU core ARM920T (200MHz)
Operating system	Linux (Kernel 2.6.x)
Power requirements	DC5V by external power source. When connected to AR2300/AR5001D receiver, power is supplied by receiver.
Power consumption	1.8W (typical)
Current consumption	Max. 300mA
Operating temperature	0 ～ 50 °C
Dimensions	(H)35mm x (W)130mm x (D)150mm (projections excluded)
Weight	400g (without cables)
Supplied accessories	Control cable（D-sub 9pin, straight） x1 Audio cable（φ3.5mm stereo） x 1 Rubber feet x4
Hardware & software requirements for ARL2300 settings	Any Windows or Mac PC with a browser having Apple's "Bonjour" add-on installed.
Hardware & software requirements for client	Any PC running Java 2 (v.1.6 or later).



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